We claim:

1. A process for producing a wear-resistant, tribological cylinder bearing surface for a piston running in a cylinder of a crankcase of an internal-combustion engine, the process which comprises:

positioning a laser such that a longitudinal axis of the laser is substantially coaxial to a cylinder of a crankcase of an internal-combustion engine;

rotating the laser about the longitudinal axis of the laser and simultaneously advancing the laser in a direction of the longitudinal axis of the laser;

feeding a powdery material through the laser and directing a jet of the powdery material to a cylinder bearing surface of the cylinder;

deflecting a laser beam to an impact region where the jet of the powdery material impinges on the cylinder bearing surface and guiding the jet of the powdery material such that at least part of the jet of the powdery material passes through the laser beam; and

at least partially melting, with the laser beam, a surface of the impact region such that the surface of the impact region

is at least partially melted before the powdery material impinges on the surface of the impact region.

2. The process according to claim 1, which comprises forming given structures in the cylinder bearing surface by using an additional laser treatment.

3. The process according to claim 1, which comprises forming oil pockets in the cylinder bearing surface by using an additional laser treatment.

4. The process according to claim 1, which comprises using, as the powdery material, at least one material selected from the group consisting of a silicon-containing material, a tungsten-containing material and a nickel-containing material.

5. The process according to claim 1, which comprises adjusting a laser energy such that the powdery material, which passes through the laser beam and is transported in the jet, is deposited on the cylinder bearing surface.

6. The process according to claim 1, which comprises adjusting a laser energy such that the powdery material, which passes through the laser beam and is transported in the jet, is alloyed into the cylinder bearing surface.

7. The process according to claim 1, which comprises adjusting a laser energy such that the powdery material, which passes through the laser beam and is transported in the jet, is alloyed into the cylinder bearing surface and is deposited on the cylinder surface.

8. The process according to claim 1, which comprises selecting a given rotational speed for the step of rotating the laser about the longitudinal axis of the laser, selecting a given translational speed for the step of advancing the laser in the direction of the longitudinal axis of the laser and selecting a given laser energy such that the powdery material is deposited with a layer thickness of substantially 800 µm to 1000 µm.

9. The process according to claim 1, which comprises selecting a given rotational speed for the step of rotating the laser about the longitudinal axis of the laser, selecting a given translational speed for the step of advancing the laser in the direction of the longitudinal axis of the laser and selecting a given laser energy such that the powdery material is alloyed into the cylinder bearing surface with a penetration depth of substantially 250 µm and such that at the same time the powdery material is deposited with a layer thickness of substantially 250 µm.

10. The process according to claim 1, which comprises operating the laser with a laser energy of substantially 2 kW.

11. The process according to claim 1, which comprises advancing the laser such that the laser passes only once through the cylinder for performing operating steps.

12. The process according to claim 1, which comprises advancing the laser such that the laser passes several times through the cylinder for performing operating steps.

13. A device for producing a wear-resistant, tribological cylinder bearing surface in a cylinder of a crankcase of an internal-combustion engine, comprising:

a laser for providing a laser beam;

a powder feed device extending trough said laser;

said powder feed device being configured to guide a jet of a powdery material through the laser beam and to guide the jet of the powdery material to an impact region on a cylinder bearing surface where the powdery material impinges on the cylinder bearing surface; and

a beam-deflecting device operatively connected to said laser, said beam-deflecting device deflecting the laser beam onto the impact region where the powdery material impinges on the cylinder bearing surface.

14. The device according to claim 13, wherein said beam-deflecting device includes at least one optical device selected from the group consisting of a mirror, a lens system and optical fibers.

15. In combination with a crankcase having a cylinder, a device for producing a wear-resistant, tribological cylinder bearing surface in the cylinder, comprising:

a laser for providing a laser beam, said laser being positioned coaxial with respect to the cylinder;

a powder feed device extending trough said laser;

said powder feed device being configured to guide a jet of a powdery material through the laser beam and to guide the jet of the powdery material to an impact region on a cylinder bearing surface where the powdery material impinges on the cylinder bearing surface; and

a beam-deflecting device operatively connected to said laser, said beam-deflecting device deflecting the laser beam onto the impact region where the powdery material impinges on the cylinder bearing surface.

16. The device according to claim 15, wherein said beam-deflecting device includes at least one optical device selected from the group consisting of a mirror, a lens system and optical fibers.